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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,769	01/14/2002	David George Leppard	A-21884/A/PCT	2266

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EXAMINER	
VOLLANO, JEAN F	

ART UNIT	PAPER NUMBER
1621	

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15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/856,769	LEPPARD ET AL.	
	Examiner	Art Unit	
	Jean F. Vollano	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the c rrespondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 17-42* is/are pending in the application.

4a) Of the above claim(s) *1 and 16-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2 and 16-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The election filed 9/3/2003 has been entered. Applicant has elected Group XXVII which reads on claims 2, 30, 31, 32, 33, 34, 35, 36, 37, 38, 40, 41, and 42 (in part) the preparation of a phosphine oxidation state V wherein there is one phosphorus in the phosphine oxide compound and wherein n is 1 and m is 2 and there are no heterocyclic rings in the structure. The acyl phosphine is formed by reaction without isolating the intermediates and alkali metals or mixtures thereof but no magnesium and with a catalyst. Applicant has given an elected species that was not requested as a starting point for the search. The election is with traverse.

2. In the traversal to the action Applicant argues that there is a special technical feature which unites the intermediate reaction and the final product reaction. However this alleged special technical feature is not applicant's contribution to the art nor is there only one special technical feature that can be referred to in the analysis. The compounds are known the utility of using the compounds (PV) as photoinitators are known. However this utility is only for the compounds of claim 2 (phosphorus V) not the compounds of claim 1 (Phosphorus III). Nor are the claims directed to the compounds, themselves, but the process of preparing them. There are various processes for preparing the final products known. These processes may or may not include the process of preparing the intermediate. If the process of preparing the final product is unknown this in itself does not mean the process of preparing the intermediate is unknown. It only means that the final process does not use this intermediate as a step in the overall process. Also it is noted that the intermediate is not isolated in the final product reaction to produce

phosphine V moieties but would be isolated as the final product of claim 1 in preparing phosphine III moieties.

Applicant also argues that the Markush group has a common structure being present. The only common structure to all the alternatives in the Markush grouping of compounds is a phosphorus. There are not other moieties that are given as an alphabet soup. Also a phosphorus III oxidation state is not the same as a phosphorus V oxidation state so even the phosphorus moieties are not the same. Also with the phosphorus V a phosphine oxide is not chemically the same as a phosphine sulfide. The mono phosphine preparation as a phosphine oxide or sulfide or as a phosphine is not only being claimed but also the preparation of bis phosphines with different R1 structures than the monophosphine. However this compound argument is not a germane argument since some of the compounds are known and therefore not Applicant's contribution to the art. There are also various processes being taught to prepare various products these processes which include different starting materials and different products and different reagents to accomplish the process were divided into different groups. It was not based on whether the starting materials were in a Markush group it was based on the various reactions with various different starting materials and products and various different reaction conditions. Some of the compounds are known. Some of the process steps are know as shown in the international search report. There are different reagent different reaction conditions for the process.

There is also a second requirement for a finding of Unity to be present. The requirement is a special technical feature **and** unity of invention. If one of these is missing then there is a lack of unity. The processes do not form a group under unity of invention which is directed to a

compound , a process of preparing the compound, a method of using the compound and an apparatus for preparing the compound. For unity of invention to be present a compound and one or more of the other processes or apparatus must be present. The requirement for there not to be a lack of unity is a special technical feature and unity of invention. Both requirements must be met. However in this scenario neither has been met. The lack of unity is proper and MADE FINAL. However after the search the examiner will review what exactly has been covered in the search of the elected group and may rejoin some additional process groups in which the examiner is sure that the full scope of the claimed language has been covered by the search for the elected group, solely as a courtesy to applicant.

3. Upon completion of the search. The examiner searched in the section of the classification for processes including non heterophosphine oxide and sulfide structures that contained two carbonyl moieties. The examiner also did an on line structure search of the compounds above and a word search including the process steps for preparing the phosphorus V phosphine oxide and sulfide compounds wherein there are no heterorings. The examiner did not search the process for making any phosphorus III compounds and therefore any references to these processes were found in solely in the preparation of the elected phosphorus V group. The examiner's search for the elected group also was slightly widened to cover the reagents, including alkali metals, magnesium and alkyl metals, and presents or absence of a catalyst. Therefore the final group that has been searched is one in which the compound being prepared is found in instant claim 2 wherein Z is S or O n is 1 and m is 2 R1 is any non heteroring structure found under the n is 1 section of claim 1. R2 is any non heteroring and R 3 is any non heteroring

structure. The process for these compounds can be with or without a catalyst and including alkali metals or magnesium in combination with lithium or mixtures there of and with or without a catalyst . The claim of without isolation of the intermediate is the only option in the process for all the alternatives found in claim 2. Upon review claim 39 (in part) has been added to the elected group. The examiner did not ask for an election of species for any group that did not contain a hetero ring and therefore the examination and any rejections are based on the final group given above in which the examiner finds a thorough search has been completed for the limitations of the group. The examiner notes that this regrouping has been done as a courtesy to applicant based on what was searched during the examination. It does not mean that any non elected groups would necessarily be regrouped. This revision was based solely on what the examiner found and was able to expand in this search only. And the regrouping was done as a courtesy to applicant since the examiner felt that the areas for the groupings had been covered in the examination. The examiner also expanded a little to include the sulfides again as a courtesy.

Claim Rejections - 35 USC § 112

4. Claims 2, 30-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation of " radicals" for some of the R groups. This is confusing as written as to whether applicant is claiming a group which has a lone electron such as in "free radicals" or is trying to claim a functional group such as alkyl, aryl, etc. If the group is being

claimed then please state the " phenyl , naphthyl ... groups" and not the "radicals phenyl naphthyl..." so that it is clear that the term does not refer to a free radical.

Claim 2 recites the limitation of "where appropriate in the presence of a catalyst". This is confusing as to the metes and bounds of the instant invention as to when it is "appropriate" to have a catalyst and when it is not "appropriate". The invention must be written in clear and concise language pointing out the metes and bounds of the instant invention. The term "where appropriate" is vague and indefinite. The only reference to the catalyst in the specification is "when required" which does not define "where appropriate". The term is confusing as to the metes and bounds that are being claimed. Also without the definition of the metes and bounds of the term even a solvent that speeds up the reaction by dissolution of the materials can be considered a catalyst (i.e. increases the reaction and is not used up during the reaction). Since the claim is not clear what when appropriate or what are the metes and bounds of the term catalyst the examiner will read this in its broadest sense as shown above.

5. Upon completion of the search the claims that have been elected to the scope that is found above, with the regrouping, are free of prior art. An analysis of the closest prior art is given below:

US 5,218,009 teaches the preparation of diacylphosphine oxides which contains some of the steps being claimed. However the starting material is a phosphine and not a halide of a phosphine.

US 5,767,169 and US 5,965,776 teach the preparation of diacylphosphine oxides by reaction of a triethyl phosphite not a phosphine halide.

US 5,721,292 teaches the preparation of diacylphosphine oxides by reaction of tris(trimethylsilyl) phosphine and a benzoyl chloride.

US 5,616,787 teaches the process of preparing phosphine oxides of the formula of instant claim 2 by reacting a mixture of n butyl lithium isobutyl phosphine and trimethylbenzoylchloride followed by some purification but not isolation to which a oxidizing agent is added.

The essential process exemplified by Husler is isoBuPH2 +Li n-butyl = isobutyl P $(Li)_2$ + n-butane

Isobutyl $P(Li)_2$ + trimethylbenzoylchloride = isobutyl P (trimethyl benzoyl)$_2$ + Lithium chloride (salt). However the starting lithium compound is not prepared with lithium and although CA:112:199231 teaches generically that phenyl phosphine (i.e. $PhP(H)_2$) is know to be able to be reacted with lithium to form phenyl $P(Li)_2$ this is an aryl phosphine and not a alkyl phosphine and therefore there is no showing of equivalence in this case so a 103(a) with these two references is not possible.

US 6,579,663 and its parent US 6,399,805 teach a process which is similar to the one being claimed in the instant invention except that the process is in steps. This could look like an obvious variant, however the date makes this and its parent not fall under the category of prior art.

6. The examiner notes that the claims contain non elected subject matter which should be removed. Also non elected claims should be canceled to hasten prosecution.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean F. Vollano whose telephone number is 703-305-4483. The examiner can normally be reached on Monday-Thursday 6:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 703-308-4532. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4556 for regular communications and 703-308-4556 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

Jean F. Vollano
Primary Examiner
Art Unit 1621

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November 2, 2003